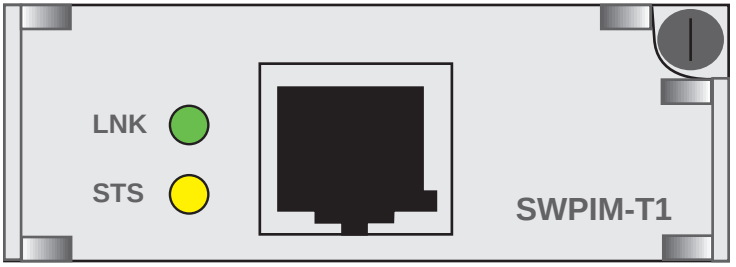
SWPIM-T1
Installation Guide



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Application of Council Directive(s):	**89/336/EEC** **73/23/EEC**
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Manufacturer's Address:	**35 Industrial Way** **PO Box 5005** **Rochester, NH 03867**
European Representative Name:	**Mr. J. Solari**
European Representative Address:	**Cabletron Systems Limited** **Nexus House, Newbury Business Park** **London Road, Newbury** **Berkshire RG14 2PZ, England**
Conformance to Directive(s)/Product Standards:	**EC Directive 89/336/EEC** **EC Directive 73/23/EEC** **EN 55022** **EN 50082-1** **EN 60950**
Equipment Type/Environment:	**Networking Equipment, for use in a Commercial or Light Industrial Environment.**

We the undersigned, hereby declare, under our sole responsibility, that the equipment packaged with this notice conforms to the above directives.

Manufacturer	Legal Representative in Europe
Mr. Ronald Fotino	Mr. J. Solari
Full Name	Full Name
Compliance Engineering Manager	Managing Director - E.M.E.A.
Title	Title
Rochester, NH, USA	Newbury, Berkshire, England
Location	Location

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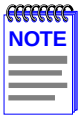
INTRODUCTION

Only qualified personnel should perform installation procedures.

Welcome to the Cabletron Systems *SWPIM-T1 Installation Guide*. This manual gives an introduction to the SWPIM-T1, lists features and capabilities, details the cabling pinouts, and explains how to install the SWPIM-T1.

The SWPIM-T1 provides a full and a fractional T1 interface for a host platform designed to receive the SWPIM (Sliding WAN Physical Interface Module) architecture.



The term “host platform” may be used to indicate the device or module, such as the SSR-600 or the HSIM-SSR-600, into which the SWPIM-T1 is installed.

USING THIS GUIDE

Read through this guide completely to understand the features and capabilities of the SWPIM-T1.

A general working knowledge of WAN and Ethernet and IEEE 802.3 data communications networks and their physical layer components is helpful before using the SWPIM-T1.

STRUCTURE OF THIS GUIDE

This guide is organized as follows:

This **Introduction** provides preliminary information that will aid in using this manual, lists technology and user’s guides that may help the user to set up and manage the SWPIM-T1, gives an overview of the SWPIM-T1 and its features, and information on how to get help from Cabletron Systems.

Chapter 1, **Installation**, provides instructions on how to install the device into a host platform, and gives the LED indications.

Appendix A, **Specifications**, contains information on functionality and operating specifications, connector pinout for the SWPIM-T1, environmental requirements, and physical properties.

Appendix B, **FCC Part 68 - User's Information**, explains the FCC rules for the WPIM-T1.

SWPIM-T1 FEATURES

Interfaces

The SWPIM-T1 is installed into any Cabletron Systems product that supports the SWPIM architecture, such as the SSR-600, or the HSIM-SSR-600. Using software, the SWPIM-T1 is user manageable through the host platform. Refer to the host platform software user's manual for information on how to configure the SWPIM-T1 using software.

The SWPIM-T1 uses a single RJ48 connector supporting the T1 interface. Refer to Appendix A for the Cabletron Systems part number and pin assignments for the T1 interface cable.

Internal CSU/DSU

The SWPIM-T1 provides a T-1 interface that includes a built-in Channel Service Unit/Digital Service Unit (CSU/DSU) for direct connection to a T-1 line. This SWPIM supports both full T1 or fractional T1 using 56 or 64 Kbps timeslots.

The T1 Channel Service Unit (CSU) meets the following specifications:

- Line Rate: 1.544 Mbps +/-50bps
- Supporting Long Haul (DS1) or Short Haul (DSX-1) capability
- Transmit Specifications:
  Line Build Out (DSX-1): 0-133 ft, 133-266 ft, 266-399 ft, 399-533 ft, 533-655 ft.
  Line Build Out (DS1): 0 dB, -7.5 dB, -15 dB, or -22.5 dB.
- Receiver Sensitivity: +0 dB to -36 dB
- Full T1 Loopback Code Detection
- Local Timing Capability

The T1 Data Service Unit (DSU) meets the following specs:

- T1 Framing Formats: D4 or ESF
- Line Coding: B8ZS or AMI
- Supports FDL Circuitry
- Channelized Loopback Capability

LEDs

The SWPIM-T1 has two LEDs, which indicate link and status conditions. Refer to Chapter 1 for more details.

RELATED MANUALS

The following Cabletron Systems manuals may help the user to set up and manage the SWPIM-T1:

SSR-600 Installation Guide

HSIM-SSR-600 Installation Guide

6C105 SmartSwitch 6000 Overview and Setup Guide

Ethernet Technology Guide

Cabling Guide

The manuals referenced above can be obtained on the World Wide Web in Adobe Acrobat Portable Document Format (PDF) at the following site:

http://www.cabletron.com/

Cabletron Systems applicable software manuals for the SSR-600 and the HSIM-SSR-600 host platforms (Cabletron Routing Software Manuals):

Bridging Configuration Guide

Event Logging System Message Guide

Network Interface Operations Guide

Routing Protocols Reference Guide

Routing Protocols User's Guide

System Software Guide

ClearVISN Routing Configurator User's Guide

Systems Network Architecture Guide

Quick Reference Guide

DTF (Data Trace Facility) User Guide

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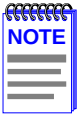

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Electrical Hazard Warning symbol. Warns against an action that could result in personal injury or death due to an electrical hazard.

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Internet mail	support@cabletron.com
FTP Login Password	ftp://ftp.cabletron.com/ *anonymous* *your email address*
To send comments or suggestions concerning this document, contact the Cabletron Systems Technical Writing Department via the following email address: **TechWriting@cabletron.com** *Make sure to include the document Part Number in the email message.*	

Before calling Cabletron Systems, have the following information ready:

- Your Cabletron Systems service contract number
- A description of the failure
- A description of any action(s) already taken to resolve the problem (e.g., changing mode switches, rebooting the unit, etc.)
- The serial and revision numbers of all involved Cabletron Systems products in the network
- A description of your network environment (layout, cable type, etc.)
- Network load and frame size at the time of trouble (if known)
- The device history (i.e., have you returned the device before, is this a recurring problem, etc.)
- Any previous Return Material Authorization (RMA) numbers

CHAPTER 1
INSTALLATION

Only qualified personnel should install the SWPIM-T1.

This chapter covers the following items:

- Unpacking the SWPIM-T1 (Section 1.1)
- Installing the SWPIM-T1 into the host platform (Section 1.2)
- A description of the LANVIEW LED indications (Section 1.3)
- Connecting the SWPIM-T1 to the network (Section 1.4)
- What to do once the SWPIM-T1 is installed (Section 1.5)

1.1 UNPACKING THE SWPIM-T1

Use static electricity precautions when handling the SWPIM-T1.

1. Open the packing box and remove the SWPIM-T1.
2. Attach the antistatic strap (refer to the instructions in the antistatic wrist strap package) before removing the SWPIM-T1 from the antistatic packaging.

Failure to observe static safety precautions could cause damage to the SWPIM-T1. Follow static safety handling rules and wear the antistatic wrist strap shipped with the SWPIM-T1.

Do not cut the non-conductive bag to remove the device. Damage could result from sharp objects contacting the device or components.

3. Verify that the SWPIM-T1 is undamaged. Refer to Getting Help if there is any damage to the device. Do not attempt to install the SWPIM-T1 if it is damaged.

1.2 INSTALLING THE SWPIM-T1

The SWPIM-T1 can be installed in any available open slot in the host platform. To install the SWPIM-T1, proceed as follows:

1. You do not need to power down the host platform to install the SWPIM-T1. The SWPIM-T1 can be installed into the host platform with the power on or off.
2. Remove the blank panel covering the slot in the host platform in which the SWPIM-T1 will be installed. See Figure 1-1.
3. Ensure that the antistatic wrist strap is attached and used as recommended.

Observe all precautions to prevent damage from Electrostatic Discharge (ESD).

4. Remove the SWPIM-T1 from the plastic bag. (Save the bag in the event the device must be removed from the host platform).
5. Hold the SWPIM-T1 with the faceplate facing away (right side up) from the host platform. The 40-pin connector should be facing towards the empty slot, with the wide part of the connector oriented down, as shown in Figure 1-1.
6. Locate the rail guides inside the slot in which the SWPIM-T1 will be installed. See Figure 1-1.
7. Install the SWPIM-T1 in the host platform by aligning the SWPIM-T1 with the rail guides in the host platform and sliding it in. Take care that the SWPIM-T1 slides in straight and properly engages the backplane host connector. Do not force the device.

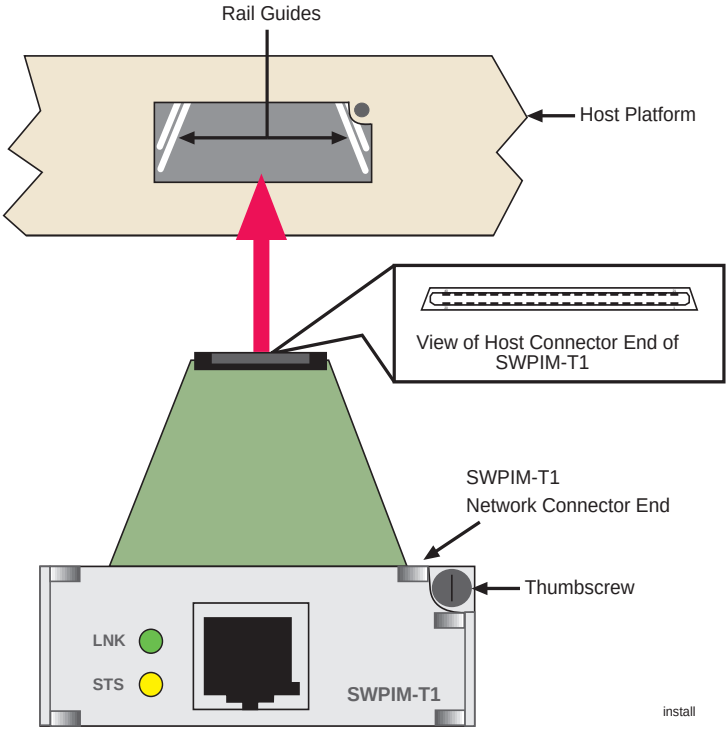

Figure 1-1 Installing the SWPIM-T1 into the Host Platform

8. Fasten the SWPIM-T1 with the thumbscrew.

9. Replace power to the host platform, if necessary. Check to see that the host platform LED indicators go to their normal configuration. If they do not, remove the SWPIM-T1 from the host platform and contact Cabletron Systems.

CAUTION

Do not connect any WAN cables until the SWPIM-T1 has been configured in software. The phone company can shut down a line that has an unconfigured connection on it.

10. The SWPIM-T1 must be configured before the WAN connection is made. Once the SWPIM-T1 has been configured, the host platform must undergo a soft or hard restart in order for the SWPIM-T1 to be recognized and for traffic to pass. Refer to the appropriate software manual to configure the SWPIM-T1.

1.3 LANVIEW LED INDICATIONS

Refer to Table 1-1 for the link LED indications for the SWPIM-T1.

Table 1-1 Link LED

Color	Indication
Off	Disabled or Not Configured
Red	Port is Active, No Link
Amber	Transmit or Receive Traffic
Green	Port is Active, Linked
Blinking Green	Port is in Test Mode

Refer to Table 1-2 for the status LED indications for the SWPIM-T1.

Table 1-2 Status LED

Color	Indication
Off	Normal or Disabled
Red	Red Alarm
Amber	Yellow Alarm (RAI)
Blinking Amber	Loopback Test Mode
Blinking Green	Blue Alarm (AIS)

Red Alarm

Declared because of loss of signal, loss of framing, Alarm Indication Signal. After a Red Alarm is declared, a Yellow Signal is sent to the far-end.

Yellow Alarm

Declared because of an incoming Yellow Signal from the far-end.

Blue Alarm

T1 Multiplexer failed or is disconnected. CSU must send continuous unframed “1”s to the network.

1.4 CONNECTING TO THE NETWORK

Figure 1-2 depicts a typical configuration for the SWPIM-T1.

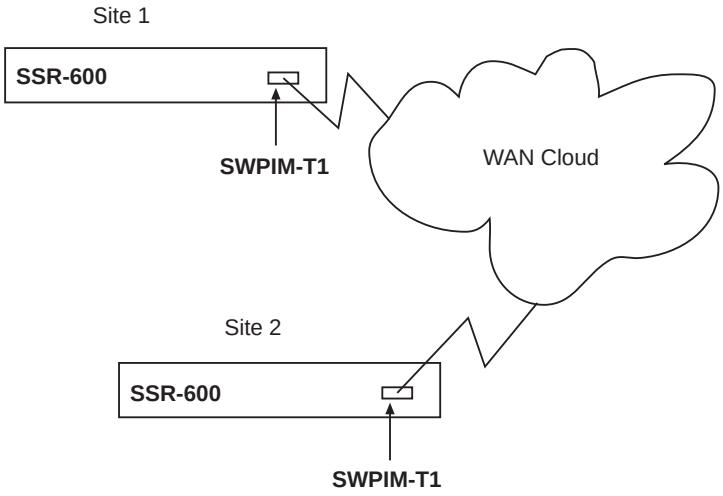

Figure 1-2 SWPIM-T1 Typical Configuration

1.5 COMPLETING THE INSTALLATION

After installation, the SWPIM-T1 will need to be configured for the network. Refer to the host platform software documentation in order to set up and manage the SWPIM-T1.

APPENDIX A
SPECIFICATIONS

This section describes the environmental specifications and safety and approval requirements for the SWPIM-T1. Cabletron Systems reserves the right to change these specifications at any time without notice. Pinouts and the T1 cable are also listed in this appendix.

A.1 PHYSICAL PROPERTIES

Dimensions:	1.91 H x 5.40 W x 19.05 D (cm) 0.75 H x 2.125 W x 7.50 D (in)
Weight (Unit):	0.068 kg (0.15 lb)
Nominal current draw on +5V supply from host platform:	150 mA
MTBF (Predicted):	10,119,716 hours

A.2 NETWORK INTERFACE

The connector for the RJ48 network port can be seen in Figure A-1:

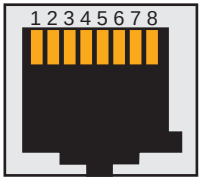

Figure A-1 RJ48 Pinout

A.2.1 Pinout for the T1 Interface Connector

The network interface pin assignments for the network connector are shown in Table A-1.

Table A-1 Pinouts for the T1 Interface Connection

Pin	Signal
1	Receive Ring
2	Receive Tip
3	Shield Ground
4	Transmit Ring
5	Transmit Tip
6	Shield Ground
7	Shield Ground
8	Shield Ground

A.3 T1 CABLE ASSEMBLY

Table A-2 lists Cabletron Systems part numbers for the interface cables for the SWPIM-T1. A standard 20-foot cable is available or the customer may specify the length of cable when ordering.

Table A-2 SWPIM-T1 Cable Part Numbers

Interface Cable	Cabletron Part Number
T1 Line Interface Cable	9372094-20[1]
T1 Line Interface Cable	9372094-L[2]

1. Standard 20-foot T1 Line Interface Cable.
2. (L denotes length required in feet or meters). For example: 9372094-3 denotes a 3-foot cable; 9372094-3M denotes a 3-meter cable.

The following table provides connector information for the SWPIM-T1 interface cable.

Table A-3 SWPIM-T1 Connector Information

Cabletron Systems interface cable part number	9372094-L
Description	T1 line interface cable
Connector 1	RJ48C
Connector 2	RJ48C

A.4 ENVIRONMENTAL REQUIREMENTS

Operating Temperature:	+5° to +40°C (41° to 104°F)
Non-operating Temperature:	-30° to +90°C (-22° to 194°F)
Operating Humidity:	5% to 90% (Non-condensing)

A.5 REGULATORY COMPLIANCE

Safety	UL 1950 (without D3 deviations), CSA C22.2 No. 950, and EN 60950
EMI	FCC Part 15 Class A
Electromagnetic Compatibility (EMC)	Meets the EMC requirements of EN 50082-1 including: IEC 801-2 (ESD), IEC 801-3 (Radiated Susceptibility), and IEC 801-4 (EFT/B)
NEBS	TR-NWT-000063: Network Equipment Building System (NEBS) Generic Equipment Requirements GR-1089-CORE: EMC and Electrical Safety Generic Criteria for Network Telecommunications Equipment
TELECOM	The SWPIM-T1 meets FCC Part 68 (see Appendix B).

APPENDIX B

FCC PART 68 - USER'S INFORMATION

The following instructions are to ensure compliance with the Federal Communications Commission (FCC) Rules, Part 68.

1. All direct connections to T1 lines must be made using standard plugs and jacks.
2. Before connecting your unit, you must inform the local telephone company of the following information:

Port ID	REN/SOC	FIC	USOC
SWPIM-T1	6.0N	04DU9-BN 04DU9-DN 04DU9-1KN 04DU9-1SN 04DU9-1ZN	RJ48C

3. If the unit appears to be malfunctioning, it should be disconnected from the telephone lines until you learn if your equipment or the telephone line is the source of the trouble. If your equipment needs repair, it should not be reconnected until it is repaired.
4. The CSU/DSU has been designed to prevent harm to the T1 network. If the telephone company finds that the equipment is exceeding tolerable parameters, the telephone company can temporarily disconnect service, although they will attempt to give advance notice if possible.
5. Under the FCC Rules, no customer is authorized to repair this equipment. This restriction applies regardless of whether the equipment is in or out of warranty.
6. If the telephone company alters their equipment in a manner that will affect use of this device, they must give you advance warning so as to give you the opportunity for uninterrupted service. You will be advised of your right to file a complaint with the FCC.

7. The attached affidavit must be completed by the installer.

8. In the event of equipment malfunction, all repairs should be performed by our Company or an authorized agent. It is the responsibility of the users requiring service to report the need for service to our Company or to one of our authorized agents.

Service can be obtained at Cabletron Systems Technical Support:

Address:	Cabletron Systems, Inc. 35 Industrial Way Rochester, NH 03867-0505
Phone:	(603) 332-9400
Internet mail:	support@ctron.com

AFFIDAVIT FOR THE CONNECTION OF CUSTOMER EQUIPMENT TO 1.544 MBPS AND/OR SUBRATE DIGITAL SERVICES

For the work to be performed in the certified territory of

Telco's name:_____

State of:_____

Country of:_____

I, _____ , of _____
(Name of Authorized Representative) (Customer Name)

_____ , _____
(Customer's Address) (Telephone Number)

being duly sworn, state:

I have responsibility for the operation and maintenance of the terminal equipment to be connected to _____ 1.544 Mbps and/or _____ Subrate digital services. The terminal equipment to be connected complies with Part 68 of the Commission's rules except for the encoded analog content and billing protection specifications. With respect to encoded analog content and billing protection:

- I attest that all operations associated with the establishment, maintenance and adjustment of the digital CPE with respect to encoded analog content and encoded billing information continuously complies with Part 68 of the FCC's Rules and Regulations.
- The digital CPE does not transmit digital signals containing encoded analog or billing information which is intended to be decoded within the telecommunications network.
- The encoded analog and billing protection is factory set and is not under the control of the customer.

I attest that the operator(s) maintainer(s) of the digital CPE responsible for the establishment, maintenance and adjustment of the encoded analog content and billing information has (have) been trained to perform these functions by successfully completing one of the following: Check appropriate one(s).

a. A training course provided by the manufacturer/grantee of the equipment used to encode analog signals; or

b. A training course provided by the customer or authorized representative, using training materials and instructions provided by the manufacturer/grantee of the equipment used to encode analog signals; or

c. An independent training course (e.g. trade school or technical institution) recognized by the manufacturer/grantee of the equipment used to encode analog signals; or

d. In lieu of the proceeding training requirements, the operator(s) maintainer(s) is (are) under the control of a supervisor trained in accordance with _____above.

I agree to provide_____with proper documentation

(Telco's Name)

to demonstrate compliance with the information as provided in the proceeding paragraph, if so requested.

_____ (Signature)

_____ (Title)

_____ (Date)

Subscribed and sworn to me this _____ day of _____ , 19____ .

_____

(Notary Public)

My commission expires: _____